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IRRIGATION ✓

SYNOPSIS OF FILM

1. Irrigating the Arid Lands of the West.
Making the Desert "to Blossom as the Rose."
2. Unreclaimed Desert Land of the Southwest.
3. The Roosevelt Dam and Reservoir on Salt River,
Arizona.
Dam—284 Feet High—1125 Feet Long.
Reservoir—26 Square Miles—Capacity 400,000,000,000
Gallons.
4. Granite Reef Diversion Dam, Where Water is
Turned from the River Channel into the Main
Canals.
5. Electric Power House Below the Dam.
6. The Reservoir Supplies Canals Having a Total Length
of 700 Miles.
7. A Concrete Aqueduct Carrying a Canal Across a Dry
River Bed.
8. A Control Gate.
9. Desert Land and Reclaimed Land.

IRRIGATION

SINCE much of the land of the United States extending from 110° west longitude to the Rocky Mountains and beyond is extremely fertile but has an average yearly rainfall insufficient to support agriculture, many private and governmental irrigation projects have been completed to supply this lack of water. The government, with its immense resources, has opened more than a million acres of irrigated land to the people of these United States, and has made possible a large population in districts formerly given over to the coyote, the rattlesnake and other undesirable occupants. At the beginning of the twentieth century, Congress began an investigation of the possibilities of irrigation in the arid regions of the west. Reports of the experts employed were favorable, and Congress passed the Reclamation Act which became operative in 1902.

This act deals with the money with which the various reclamation projects are built, the construction of irrigation systems to water public and private lands, free entry to the public lands by which anyone may acquire title to sufficient land to support a family, the limiting to 160 acres of the area to which water will be furnished to an individual, easy terms for the repayment of the cost of the system and the use of the money thus obtained for the financing of other reclamation projects.

The task of supplying water to arid regions was given to the Reclamation Service, and the engineers of that department have accomplished wonderful results by the conversion of 1,500,000 acres of desert tracts into irrigated and productive farms.

The Reclamation Service has built the highest dam in the world, on the Boise River in Idaho; and the world's greatest storage dam, on the Rio Grande at Elephant Butte, New Mexico. The reservoirs which it has built will contain sufficient water to cover the entire state of Delaware to a depth of two feet. It has built over 1,000 miles of conduits, 25 miles of tunnels, and 85 miles of wooden flumes. Its canals, placed end to end, would encircle the United States. The dams, bridges, canal drops, water checks, and other structures number over 70,000. It has built and operates roads, telephone systems, electric power, and transmission plants and railroads.

In most of the twenty-three irrigation projects already completed, the aim has been to construct reservoirs of sufficient size to store the water which, falling as rain in the spring, was formerly carried by the rivers to the sea, or was evaporated by the heat of the sun. During the hot summer season, this water is released through canals, ditches and conduits of various kinds at times when the land is most in need of water.

Of the irrigated lands of the United States 700,000 acres are now producing an annual crop worth over \$15,000,000, an amount which will increase from year to year as other projects are completed and as the land is better developed. Many thousands of acres devoted to fruit trees will be productive in a few years. The main crop is alfalfa, a species of clover which provides one of the most valuable varieties of hay for cattle and other domestic animals.

Hay, cereals, fruits, sugar beets, cotton, and garden products are other crops grown on irrigated land. A fine species of Egyptian cotton of long fibre is now grown in Arizona and New Mexico. The apples, oranges and lemons of the Pacific coast are now competing with eastern

and foreign products. The sugar beet promises to be a solution of our sugar difficulties.

The Salt River Reclamation Project of Arizona is one of the most stupendous engineering feats of the world. About eighty miles above Phoenix the Roosevelt Dam, built of rubble masonry, rises nearly 300 feet from the river bed, impounding in a natural mountain rimmed reservoir of nearly twenty-six square miles over 400,000,000,000 gallons of water. The semi-circular dam at the top is an arch of 1125 feet surmounted with a broad roadway forming a bridge between the banks of the river.

Just below the dam is an electric power house which utilizes some of the 26,000 horse power energy generated by the water falling over the spillway. This electricity is carried by cables to Phoenix and to surrounding towns, to mines, and to Indian Reservations. It furnishes light and power for federal, municipal, and private uses.

Sixty miles below the Roosevelt Dam is the Granite Reef Diversion Dam, where the water of the reservoir is turned aside from the river channel into main canals and laterals having a total length of over 700 miles.

Before the United States Government took up the project of the irrigation of the Salt River Valley, a private concern had attempted to utilize the river for irrigation and power purposes, but the cost of a successful system was too great for private enterprise and, at best, it was only a partial success. Only a few thousand acres were irrigated and the power, because of lack of a sufficient storage reservoir, was developed only at high water. Around the river valley stretched mile after mile of arid soil covered with greasewood and cactus, the home of the coyote, rattlesnake, horned toad, and scorpion.

Now broad canals flow through these former deserts distributing by means of smaller canals, flumes, and ditches the life-giving water to the thirsty land. Broad

fields of long fibre cotton and alfalfa yielding six crops a year, young orchards and truck gardens of every kind have taken the place of greasewood and cactus. Over 250,000 acres are now under cultivation, yielding crops valued at over \$5,000,000 yearly.

This work of reclaiming arid land is of the greatest benefit to the people of the United States. It relieves the overcrowding of population in the eastern cities and towns, and furnishes us an immense area in which may be cheaply grown those articles of food necessary to life and health.

QUESTIONS, TOPICS, SUGGESTIONS

1. Look on government maps for the locations of reclamation projects.
2. How much annual rainfall is usually necessary for successful agriculture in the United States?
3. Explain to the class why it seldom rains in the summer in the southwestern part of the United States. Explain the effects of mountains in the prevention of clouds and rain.
4. What crops are raised in Washington and Oregon? In California? In New Mexico and Arizona? Why?
5. What irrigation systems had been built in Arizona and New Mexico before the coming of the white man?
6. In what other countries has irrigation been practiced? Describe the systems of Ancient Egypt.

7. Compare the population of the states of the southwest with that of the Eastern States. Tell what effect irrigation will have upon population and upon the production of food.
 8. Report on the value of irrigated and non-irrigated land in the same districts.
 9. How is the water sold to the farmers?
 10. What is done with the money paid for water furnished by the United States Government?
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QUESTIONS ON THE FILM

1. What is the appearance of the soil and of vegetation before irrigation?
2. Give a description of the Roosevelt Dam as it appears in the picture. In what state and on what river is it located?
3. What is a diversion dam? Tell how one is operated. Where is the power obtained to raise and lower the dam controls? What other uses are made of this power?
4. Explain the differences between the main canals and the smaller canals and the connections between them.
5. Describe the water check on the canal that leads to private lands.
6. Tell about the vegetation along the canals.

7. How is the water conducted from the canals to the land that is to be irrigated?
8. What is a flume?
9. How is the water carried across natural obstacles such as river beds and ravines? Describe the conduit as to appearance, size, material, and capacity.
10. What crops are pictured on the screen?
11. What is greasewood? Sagebrush? Describe the varieties of cacti.

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